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ISO

All fasteners subject to metric dimension of International Organization for Standadization.

SANYO

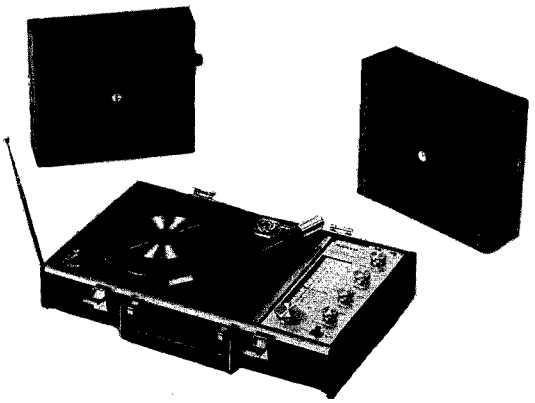
Portable Radio-Stereo Phonograph

MODEL G-2312E

SERVICE MANUAL

SANYO ELECTRIC CO., LTD.

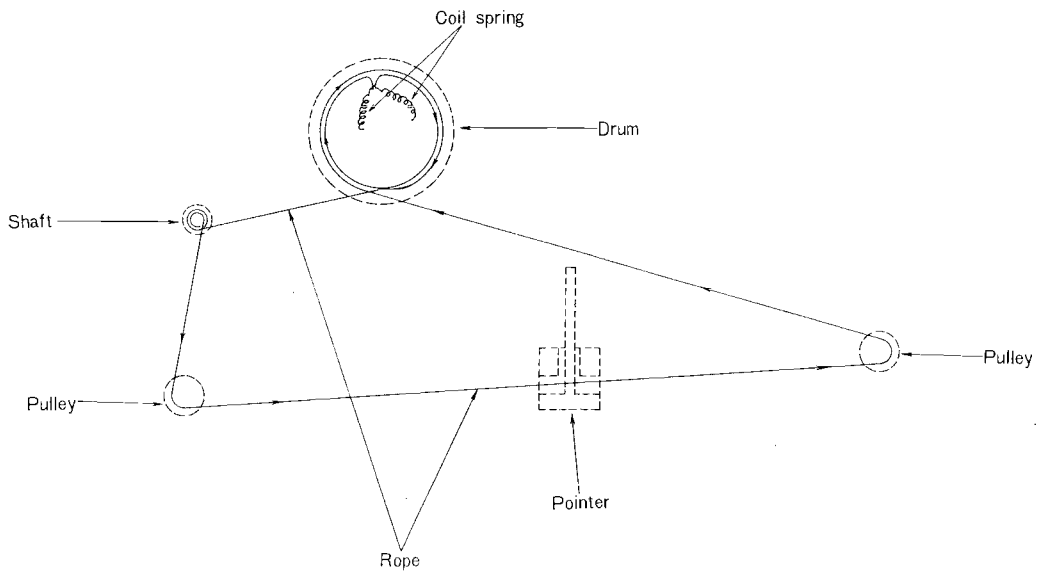
INTERNATIONAL DIVISION: SANYO ELECTRIC TRADING CO., LTD.
OSAKA, JAPAN.



SPECIFICATIONS

Circuit	4-band, 15-transistor superheterodyne 3-speed, FM. SW. MW. LW. radio-stereo phonograph
Frequency range	LW 145 - 285 KHz MW 510 - 1605 KHZ SW 6.0 - 18 MHz FM 87.5 - 104 MHz
Intermediate frequency	AM 455 KHz FM 10.7 MHz
Output power	Maximum 1.2W + 1.2W Undistorted 0.9W + 0.9W
Speakers	Two 4" permanent dynamic speakers Voice coil impedance 4 ohms
Transistors	1 FM RF amp. 1 FM converter 1 MW, LW conv. & SW mix. 1 SW local osc. 3 FM IF amp. (1 AM converter, & 2 AM IF amp.) 2 x 2 AF amp. 2 x 2 AF power amp.
Diodes	5 diodes & 1 varista
Power source	DC 9V (6 "D" size flashlight batteries) AC 110V 220V 240V select (50 or 60Hz
Current drain	No signal Radio 40mA Phono 75mA (with motor) Maximum Radio 500mA Phono 500mA (with motor)
Sensitivity	FM 2.5μV AM 100μV/m
Turn table	7" dia.
Pick-up	Stereo ceramic cartridge
Phono speed	33-1/3, 45, 78 rpm.
Dimensions	15-53/64" width x 9-13/32" heigth x 5-5/32" depth (402 x 239 x131) mm
Weigth	8.8 lds. (4 Kg) approx.

DIAL CORD STRINGING



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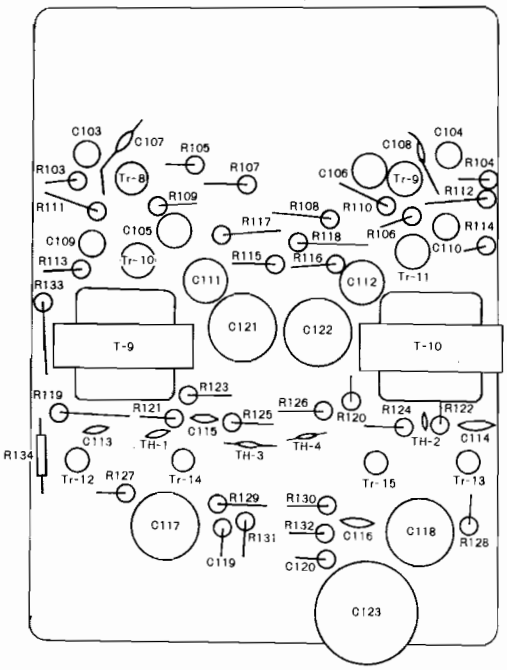
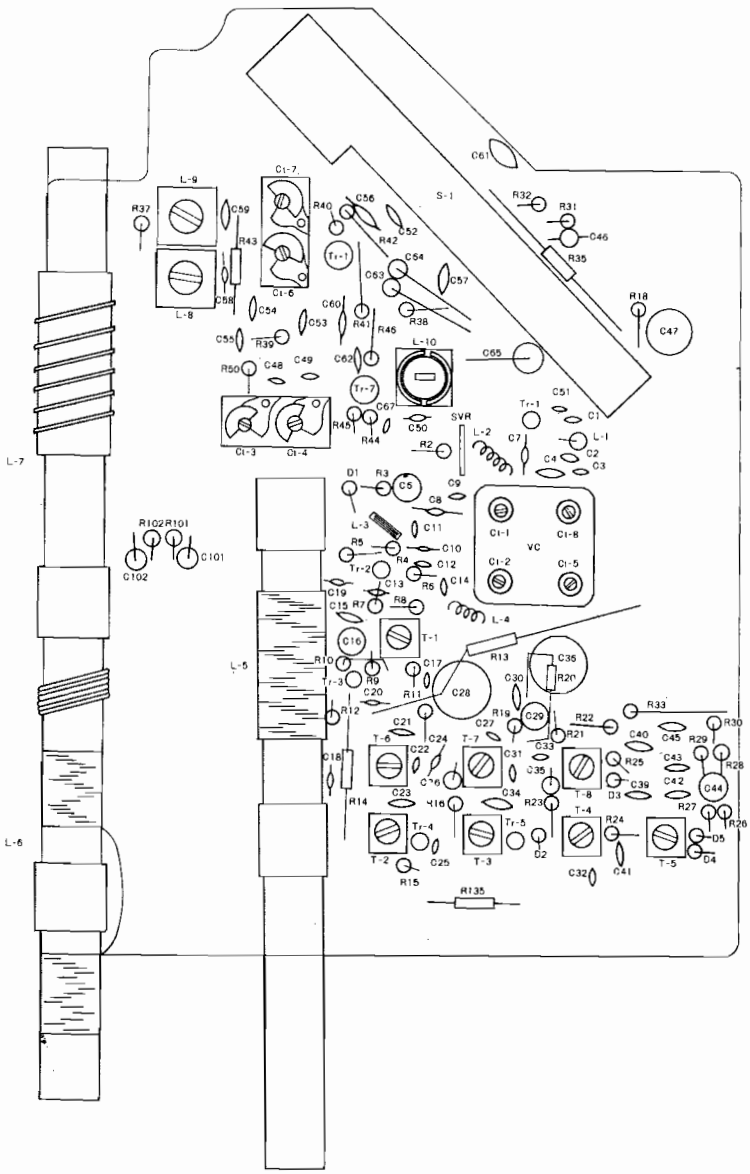
PARTS LOCATION



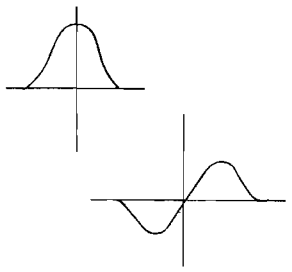


ALIGNMENT PROCEDURES

MW, SW and LW ALIGNMENT

SEQUENCE OF ALIGNMENT		WAVE RANGE	SIGNAL GENERATOR		DIAL POINTER	CONNECTION HIGH SIDE OF SIGNAL GENERATOR TO	COIL ADJUST-MENT	SIGNAL GENERATOR		DIAL POINTER	TRIMMER ADJUST-MENT	INDICATION
			FREQUENCY	MODULATION				FREQUENCY	MODULATION			
I.F.T.	T–8	M.W	455 KHz	A.M 30%	Lower end	Thru loop antenna						Max. output
I.F.T.	T–7	M.W	455 KHz	A.M 30%	Lower end	Thru loop antenna						Max. output
I.F.T.	T–6	M.W	455 KHz	A.M 30%	Lower end	Thru loop antenna						Max. output
Oscillator	M.W	M.W	490 KHz	A.M 30%	Lower end	Thru loop antenna	L–8	1650 KHz	A.M 30%	Upper end	Ct–6	Max. output
Ferrite ant.	M.W	M.W	600 KHz	A.M 30%	600 KHz	Thru loop antenna	L–6	1400 KHz	A.M 30%	1400 KHz	Ct–4	Max. output
Oscillator	S.W	S.W	5.8 MHz	A.M 30%	Lower end	Thru loop antenna	L–10	18.5 MHz	A.M 30%	Upper end	Ct–8	Max. output
Ferrite ant.	S.W	S.W	6.0 MHz	A.M 30%	6.0 MHz	Thru loop antenna	L–7	18.0 MHz	A.M 30%	18.0 MHz	Ct–5	Max. output
Oscillator	L.W	L.W	140 KHz	A.M 30%	Lower end	Thru loop antenna	L–9	295 KHz	A.M 30%	Upper end	Ct–7	Max. output
Ferrite ant.	L.W	L.W	150 KHz	A.M 30%	150 KHz	Thru loop antenna	L–5	280 KHz	A.M 30%	280 KHz	Ct–3	Max. output

FM and IF ALIGNMENTS

	SEQUENCE OF ALIGNMENT	WAVE RANGE	ALIGNMENT FREQUENCY	TEST EQUIPMENTS CONNECTIONS	ADJUSTMENT	CURVE
1	I.F.T T-3	F.M	10.7 MHz	Connect sweep generator to test point Rod antenna, Tp-1 and oscilloscope to test point Tp-3	Detune T-5 and T-3 ture for max gain and symmetry of response curve.	
2	I.F.T T-2	F.M	10.7 MHz	Same as above connection	T-2 tune for max gain and symmetry of response curve.	
3	I.F.T T-1	F.M	10.7 MHz	Same as above connection	T-1 tune for max gain and symmetry of response curve.	
4	I.F.T T-4,5	F.M	10.7 MHz	Connect sweep generator to test point Rod antenna, Tp-1 and oscilloscope to test point Tp-4,5	T-4 and T-5 tune symmetry and max gain of response curve.	

FM and RF ALIGNMRNTS

SEQUENCE OF ALIGNMENT	WAVE RANGE	SIGNAL GENERATOR		DIAL POINTER	CONNECTION HIGH SIDE OF SIGNAL GENERATOR TO	COIL ADJUST-MENT	SIGNAL GENERATOR		DIAL POINTER	TRIMMER ADJUST-MENT	INDICATION
		FREQUENCY	MODULATION				FREQUENCY	MODULATION			
Oscillator	F.M	87.2 MHz	F.M 30%	Lower end	Signal generator to C1	L-4	105 MHz	F.M 30%	Upper end	Ct-2	Max. output
Antenna	F.M	88.0 MHz	F.M 30%	88.0 MHz	Signal generator to C1	L-2	104 MHz	F.M 30%	104.0 MHz	Ct-1	Max. output

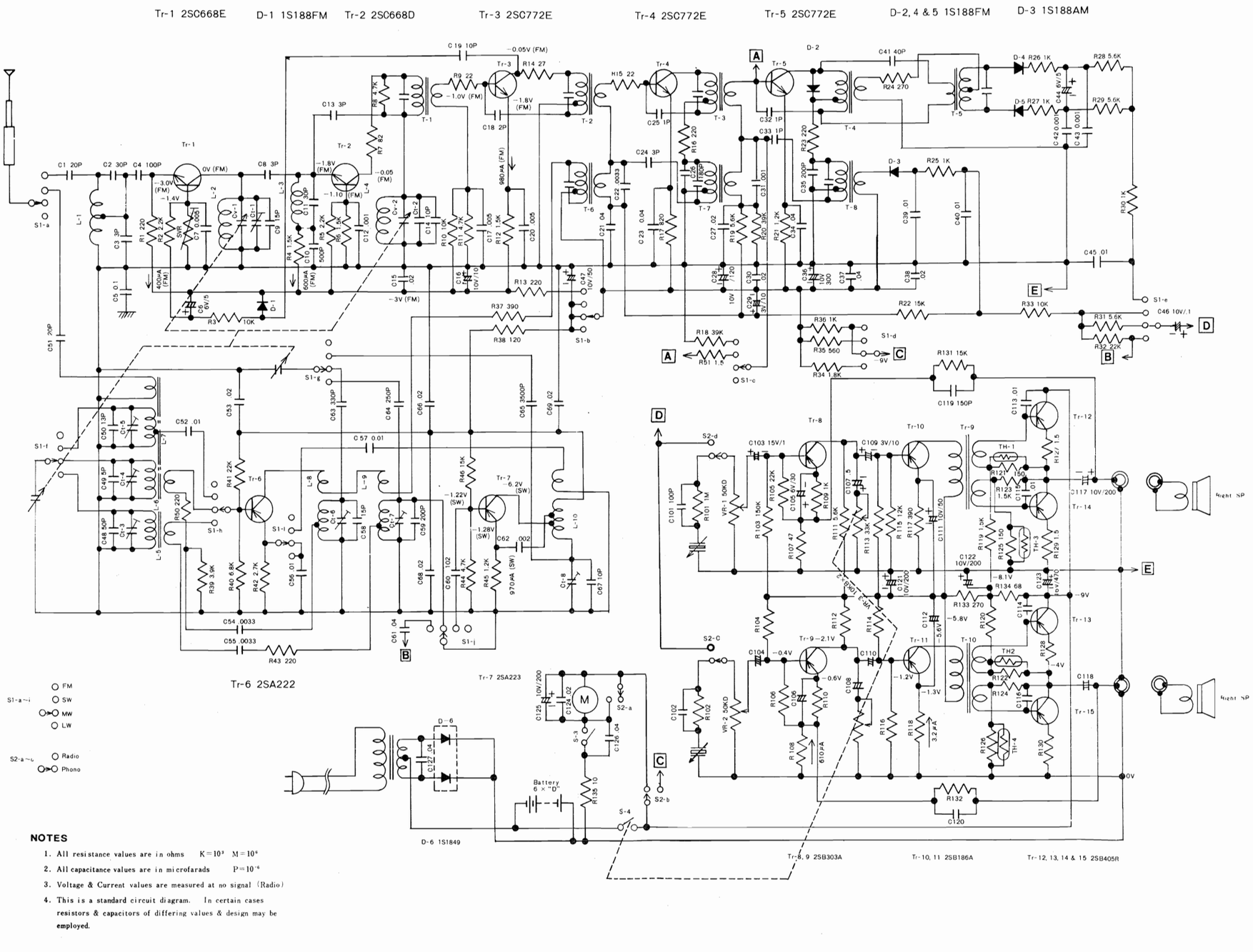
PARTS LIST

PART NO.	DESCRIPTION	Q'TY
PACKAGE		
R-47750	Inspect sheet	1
R-477459	Instruction book	1
R-407755	Individual carton (200x200)	1
R-407756	Protector (180x180)	2
R-407757	Protector (180x180)	2
R-407758	Protector (180x180)	1
R-407759	Protector (180x180)	1
	Polyethylene bag (455x600)	1
	Battery pull out ribbon (12Wx360L)	1
R-477176	Lavel	2
CABINET		
R-A7468	Motor board complete	1
R-317071c	├Motor board	1
R-277027	│├Insert nut	1
R-277028	│└Insert nut	2
R-327158a	├Dial cover	1
R-397035	├Rest stand	1
R-267094	├Decoration metal (Speed select)	1
R-267097	├Decoration metal	1
R-267098a	├Decoration metal	2
R-267301	├Decoration metal (Control metal)	1
R-355097	└Clip of pick-up	1
R-A7469	Cabinet complete	1
R-407186b	├Cabinet	1
R-327056f	├Fixing panel	1
R-397039d	│├Battery compartment cover	1
R-397045a	││├Knob (Open and close)	1
R-397046	││├Fixing panel	1
R-127002	││├Coil spring	1
R-247096	││└Insert screw	3
R-397040f	│└AC cord compartment cover	1
R-397045a	│ ├Knob (Open and close)	1
R-397046	│ ├Fixing panel	1
R-127002	│ ├Coil spring	1
R-247096	│ └Insert screw	4
R-327057b	├Fixing panel	1
R-S87044	├Lock	2
R-117050	│├Fixing metal	2
R-357014	│└Spacer	2
R-S87047	├Hinge	2
R-117051	│├Fixing metal	2
R-357017	│├Spacer	2
R-357043	│└Spacer	2
R-267303	└Plate	1
R-A7470	Handle complete	1
R-397033	├Handle	1
R-397034	├Handle cover	1
R-397161	└Fixing panel	1
R-A7471	Speaker box complete (Left)	1
R-317049	├Speaker box	1
R-407183	├Decoration panel (Front)	1
R-407184	├Decoration panel (Back)	1
R-407655	├Bottom cover	1
R-267302	├Badge	1
R-327129	├Fixing panel	6
R-447009	├Cushion (Speaker coard)	1
R-445037	├Base	1
R-117659	├Fixing metal (Speaker cord)	2
R-237009	├Buckle	1
R-117050	│├Fixing metal	1
R-357015	│└Spacer	1
R-117061	└Buckle	1
R-117051	├Fixing metal	1
R-357016	└Spacer	1
R-A7472	Speaker box complete (Right)	1
R-317050	├Speaker box	1
R-407187	├Decoration panel (Front)	1
R-407189	├Decoration panel (Back)	1
R-407655	├Bottom cover	1
R-267302	├Badge	1

PART NO.	DESCRIPTION	Q'TY
CABINET		
R-327129	├Fixing panel	6
R-447009	├Cushion (Speaker cord)	1
R-445037	├Base	1
R-117659	├Fixing metal (Speaker cord)	2
R-237009	├Buckle	1
R-117050	│├Fixing metal	1
R-357015	│└Spacer	1
R-117061	├Buckle	1
R-117051	│├Fixing metal	1
R-357016	│└Spacer	1
R-477394	└Specification sheet	1
R-A7189	Knob complete (Band select, VR, Tone)	4
R-397036a	├Knob	4
R-267102	└Decoration metal of knob	4
R-A7190	Knob complete (Tuning)	1
R-397037a	├Knob	1
R-267101	└Decoration metal of knob	1
R-A7191	Knob complete (Speed select)	1
R-397038	├Knob	1
R-267102	└Decoration metal of knob	1
R-A7192	Turn table cover complete	1
R-447014b	├Turn table cover	1
R-267099	└Decoration metal	1
R-317042b	Battery case	1
R-117098	Battery terminal (+)	2
R-32236a	Fix base	1
R-117269	Fixing metal (Rod antenna)	1
R-287012	Handle fixing panel	2
R-117053a	Handle fixing metal	1
R-117272	Fixing panel (Hinge - Motor board)	2
R-255057	Coil spring (—)	2
R-117268	Lever (Pick up)	1
R-397004	Pipe (Pick up)	1
R-327063	Case (AC cord)	1
R-325106	Holder (AC cord)	1
R-395132	Adaptor	1
R-445037	Base	6
CHASSIS		
R-A7473	Chassis complete	
R-S87337a	├Chassis assembly	1
R-117703a	│├Chassis	1
R-117704a	│└Fix metal	1
R-325017	├Pulley	2
R-247041	└Pulley shaft	2
R-417180	Printed circuit board	1
R-417181	Printed circuit board	1
R-417106	Printed circuit board	1
R-S87049	Pointer complete	1
R-247016	├Pointer	1
R-235071	└Slide pointer	1
R-S87358	Tuning shaft complete	1
R-245302	├Tuning shaft	1
R-247096	├Bearing	1
R-135003	└"C" washer	1
R-32324	Drum	1
R-155026	Coil spring	1
R-417004	Terminal board	1
R-44065	Cushion (VC)	1
	Dial rope (0.5ϕ L=850)	1

REF NO.	PART NO.	DESCRIPTION	Q'TY
ELECTRICAL PARTS			
L-6,7	R-S87353	Antenna coil assembly	1
	R-W2749	├Antenna coil	1
	R-355166	└Antenna holder	2
L-5	R-S87354	Antenna coil assembly	1
	R-W2750	├Antenna coil	1
	R-355166	└Antenna holder	2

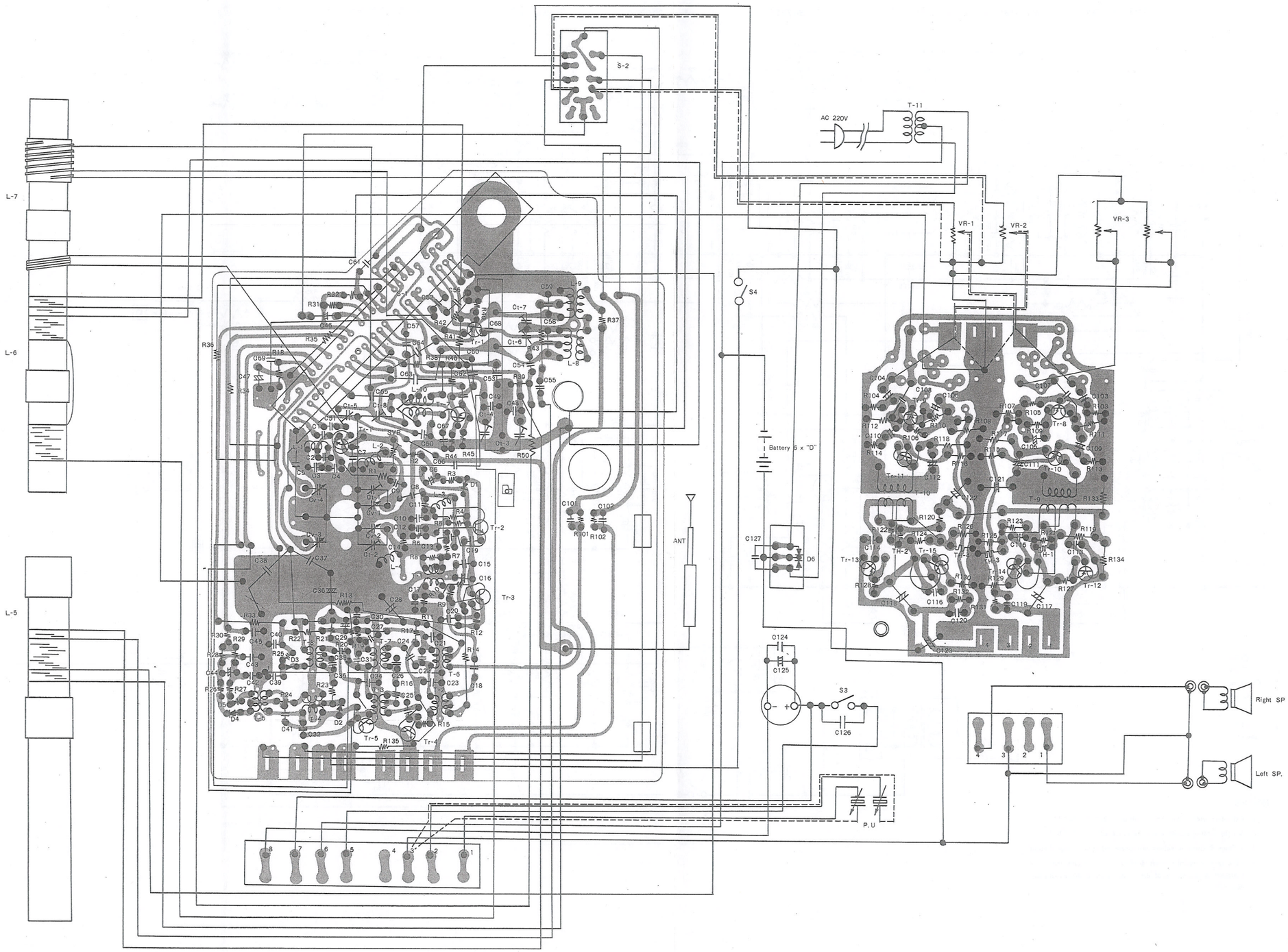
CIRCUIT DIAGRAM



NOTES

1. All resistance values are in ohms K=10³ M=10⁶
2. All capacitance values are in microfarads P=10⁻⁶
3. Voltage & Current values are measured at no signal (Radio)
4. This is a standard circuit diagram. In certain cases resistors & capacitors of differing values & design may be employed.

WM-128 Aug./'70/1000 Printed in Japan


L-7
L-6
L-5
S-2
AC 220V
T-11
VR-1
VR-2
VR-3
S4
Battery 6 x "D"
ANT
C127
D6
C124
C125
S3
C126
P.U
Right SP
Left SP.
Tr-1
Tr-2
Tr-3
Tr-4
Tr-5
Tr-6
Tr-7
Tr-8
Tr-9
Tr-10
Tr-11
Tr-12
Tr-13
Tr-14
Tr-15
TH-1
TH-2
TH-3

PARTS LIST

REF. NO.	STOCK NO	DESCRIPTION	Q'TY
ELECTRICAL PARTS			
L-1	R-W2237 (1)	Antenna coil	1
L-2	R-W9516	VHF coil	1
L-4	R-W9515	VHF coil	1
L-3	R-W9018	Choke coil	1
L-8	R-W8715	OSC coil	1
L-10	R-W8716	OSC coil	1
L-9	R-W8717	OSC coil	1
	R-C1122	Variable capacitor	1
Ct-3,4,6,7	R-C0030	Trimmer	2
T-1	R-W5T267a	IF. trans.	1
T-2,3	R-W5T268	IF. trans.	2
T-4	R-W5T271	IF. trans.	1
T-5	R-W5T170	IF. trans.	1
T-6,7	R-W5T311-3	IF. trans.	2
T-8	R-W5T312-3	IF. trans.	1
	R-R11011	Semi-fixed resistor	1
C46	R-C7910	Electrolytic capacitor (10V/ .1)	1
C6,44	R-C9098	Electrolytic capacitor (6V/5)	2
C29	R-C9079	Electrolytic capacitor (3V/10)	1
C16	R-C9060	Electrolytic capacitor (10V/10)	1
C47	R-C9081	Electrolytic capacitor (10V/50)	1
C28	R-C9091	Electrolytic capacitor (10V/120)	1
C36	R-C9534	Electrolytic capacitor (10V/300)	1
S-1	R-S4759	Rotary. Slide switch	1
	R-S2115	Socket	7
	R-24372	Tip	1
	R-23275	Eyelet	1
S-2	R-S4717	Slide switch	1
	R-257019	Spring	1
Tr-1		Transistor 2SC668	1
Tr-2		Transistor 2SC668	1
Tr-3,4,5		Transistor 2SC772	3
Tr-6		Transistor 2SA222	1
Tr-7		Transistor 2SA223	1
D-1,2,4,5		Diode 1S188FM	4
D-3		Diode 1S188AM	1
VR-1,2	R-R116711	Variable resistor	2
VR-3	R-R116705	Variable resistor	1
T-9,10	R-W6577a	Input trans.	2
C107, 108	R-C9116	Electrolytic capacitor (10V/ .5)	2
C103,104	R-C9565	Electrolytic capacitor (15V/1)	2
C109,110	R-C9079	Electrolytic capacitor (3V/10)	2
C105,106	R-C9023	Electrolytic capacitor (6V/30)	2
C111,112	R-C9081	Electrolytic capacitor (10V/50)	2
C117,118,121,122	R-C9557	Electrolytic capacitor (10V/200)	4
C123		Electrolytic capacitor (16V/470)	1
	R-S2115	Socket	3
	R-23275	Eyelet	1
Tr-8,9		Transistor 2SB303	2
Tr-10,11		Transistor 2SB186	2
Tr-12,13,14,15		Transistor 2SB405	4
TH-1,2,3,4		Thermistor SDT-09	4
	R-S0716	Speaker	2
	R-S0714d	Pick up assembly	1
	R-S0715b	├Pick up arm	1
	R-S6604	└Cartridge	1
	R-S5714a	Motor assembly	1
	R-S5715	├Motor unit	1

REF NO.	PART NO.	DESCRIPTION	Q'TY
ELECTRICAL PARTS			
	R-S5716	└Turn table	1
	R-W7731	Power trans.	1
C125	R-C9557	Electrolytic capacitor (10V/200)	1
	R-S87143	Speaker cord assembly	2
	R-S1728	Rod antenna	1
	R-S2720	Jack	2
	R-S4550	Rest switch	1
	R-S8574b	Adaptor assembly	1
	R-S3708	Power cord	1
	R-S1733	Connector	2
	R-24372	Tip	10
	R-23275	Eyelet	11
	R-12011	Lug	1
	R-S3063	Lug	1
	R-S2115	Socket	1
D-6	R-S1720	Selenium rectifier	1

REF NO.	DESCRIPTION					Q'TY
RESISTOR						
R7	Carbon	82	ohms	±10%	¼W	1
R1,13	"	220	ohms	"	"	2
R2,5	"	2.2 K	ohms	"	"	2
R3	"	10 K	ohms	"	"	1
R4,6	"	1.5 K	ohms	"	"	2
R9,15	Solid or Carbon	22	ohms	"	"	2
R14	"	27	ohms	"	"	1
R43	"	82	ohms	"	"	1
R38	"	120	ohms	"	"	1
R16,23,50	"	220	ohms	"	"	3
R24	"	270	ohms	"	"	1
R37	"	390	ohms	"	"	1
R35	"	560	ohms	"	"	1
R17	"	820	ohms	"	"	1
R25,26,27,30,36	"	1 K	ohms	"	"	5
R21,45	"	1.2 K	ohms	"	"	2
R12	"	1.5 K	ohms	"	"	1
R34	"	1.8 K	ohms	"	"	1
R42	"	2.7 K	ohms	"	"	1
R8,11,44	"	4.7 K	ohms	"	"	3
R19,28,29,31	"	5.6 K	ohms	"	"	4
R40	"	6.8 K	ohms	"	"	1
R10,33	"	10 K	ohms	"	"	2
R22,46	"	15 K	ohms	"	"	2
R32,41	"	22 K	ohms	"	"	2
R18,20	"	39 K	ohms	"	"	2
R39	"	3.9 K	ohms	"	"	1
R101,102	"	1 M	ohms	"	"	2
R135	Solid	10	ohms	±20%	½W	1
R127,128,129,130	Carbon	1.5	ohms	±5%	"	4
R121,122,125,126	"	150	ohms	±50% or ±10%	"	4
R119,120,123,124	"	1.5 K	ohms	"	"	4
R107,108	"	47	ohms	±10%	"	2
R134	"	68	ohms	"	"	1
R133	"	270	ohms	"	"	1
R117,118	"	390	ohms	"	"	2
R109,110	"	1 K	ohms	"	"	2
R111,112	"	5.6 K	ohms	"	"	2
R115,116	"	12 K	ohms	"	"	2
R131,132	"	15 K	ohms	"	"	2
R105,106	"	22 K	ohms	"	"	2
R113,114	"	33 K	ohms	"	"	2
R103,104	"	150 K	ohms	"	"	2

PARTS LIST

REF NO.	DESCRIPTION				Q'TY
CAPACITOR					
C25,32,33	Ceramic	1 pF	±0.25pF	50V	3
C18	"	2 pF	"	"	1
C3,8,13,24	"	3 pF	±0.5pF	"	4
C49	"	5 pF	±10%	"	1
C14,19,67	"	10 pF	"	"	3
C50	"	13 pF	"	"	1
C9,58	"	15 pF	"	"	2
C1,51	"	20 pF	"	"	2
C2,11	"	30 pF	"	"	2
C41	"	40 pF	"	"	1
C4	"	100 pF	"	"	1
C59	"	200 pF	"	"	1
C10	"	500 pF	"	"	1
C48	"	50 pF	"	"	1
C12,22,31	"	.001 μF	+100–0%	"	3
C7,17,20	"	.005 μF	"	"	3
C5	"	.01 μF	"	"	1
C15,27,30,38,53, 60,66,68,69	"	.02 μF	"	"	9
C21,23,34,37	"	.04 μF	"	"	4
C42,43	Mylar	.001 μF	±20%	25–50V	2
C62	"	.002 μF	"	"	1
C54,55	"	.0033 μF	"	"	2
C39,40,45,52, 56,57	"	.01 μF	"	"	6
C61	"	.04 μF	"	"	1
C35	Styrol	200 pF	"	50V	1
C64	"	250 pF	"	"	1
C63	"	330 pF	"	"	1
C65	"	3500 pF	"	"	1
C26	"	180 pF	"	"	1
C101,102	Styrol or Mica	100 pF	"	"	2
C124,126,127	Ceramic	.04 μF	+100–0%	50V	3
C113,114,115,116	Mylar	.01 μF	±20%	25–50V	4
C119,120	Styrol or Myca	150 pF	±20%	50V	2

DESCRIPTION			Q'TY
SCREW, NUT & WASHER			
Pan head tapping screw (2)	(3x10)	Rest stand - Motor board	1
"	(3x8)	Speaker (Bottom cover) -SP box	12
"	(2.3x6)	Knob - Fix board	4
"	(3x6)	Speaker - Speaker box	8
Pan head screw	(2.6x8)	Fix metal - Speaker (Bottom cover)	8
"	(3x10)	Base - Speaker box	2
"	(3x10)	Base - Cabinet	4
"	(3x12)	Base - Cabinet	1
"	(3x14)	Base - Cabinet	1
Bolt nut washer	(M3)	Rest stand - Motor board	1
"	(M3)	Base - Cabinet	1
"	(3.3x10x0.5t)	Speaker - Speaker box	8
"	(M3)	SP (Bottom cover) - SP box	12
Round head screw washer	(M2.6)	Fix metal - SP (Bottom cover)	8
"	(M3)	Base	8
Hexagon nut (1)	(M2.6)	Fix metal - SP (Bottom cover)	8
" (3)	(M3)	Base - Cabinet	1
"	(M2)	Cover - Fix board	5
Spring nut	(M3)	Base - Speaker box	2
"	(M3)	Base - Cabinet	4
Pan head tapping screw (2)	(3x6)	Rest switch - Motor board	1
"	(3x6)	Fix metal (Hinge - Motor board)	4
"	(2.3x6)	Battery terminal- Battery compartment cover	4
Pan head screw	(4x12)	Handle (Fix board) - Handle (Fix metal)	2
"	(3x10)	Motor - Motor board	2
"	(3x8)	Rod antenna - Rod antenna (Fix metal)	1
"	(3x10)	Case - Motor board	2
"	(3x6)	Motor - Motor board	1
"	(3x10)	Power trans - Motor board	2
"	(3x6)	Fix metal (Handle) - Motor board	2
"	(2.6x12)	Buckle - Speaker box	4
"	(2.6x12)	Lock - Cabinet	4
"	(3x20)	Holder - Motor board	1

DESCRIPTION			Q'TY
SCREW, NUT & WASHER			
Oval countersunk head screw	(2.6x12)	Hinge - Fix metal	4
"	(2.6x10)	Hinge - Fix metal	4
"	(3x6)	Fix metal - Cabinet	1
Round head screw	(3x8)	Lever - Pick up	1
"	(2x10)	Pick up - Shaft	1
Hexagon nut (1)	(M3)	Motor - Motor board	2
"	(M3)	Power trans - Motor board	2
"	(M2)	Pick up - Shaft	1
"	(M3)	Case - Motor board	2
"	(M3)	Holder - Motor board	1
Bolt nut washer	(M3)	Motor - Motor board	2
"	(M3)	Power trans - Motor board	4
"	(M3)	Case - Motor board	2
"	(M3)	Holder - Motor board	1
Spring washer	(M3)	Motor - Motor board	3
"	(M3)	Power trans - Motor board	2
"	(M3)	Lever - Pick up	1
Oval countersunk head screw	(3x14)	Cabinet - Motor board	2
Oval countersunk tapping screw (1)	(3x12)	Cabinet - Motor board	3
Pan head tapping screw (2)	(3x8)	Chassis - Motor (frame)	6
"	(3x6)	Chassis - Motor board	1
Pan head screw	(3x4)	Back plate - Chassis	2
"	(3x6)	Chassis - P.C.board	4
Round head screw	(2.6x4)	Slide switch - Chassis	2
"	(2.6x4)	VC - P.C.board	2
"	(2.6x6)	VC - P.C.board	1
Hexagon nut	(M8)	Tuning shaft - P.C.board	1
Spring washer	(M2.6)	Drum - VC	1
Spring washer	(M2.6)	Slide switch - Chassis	2